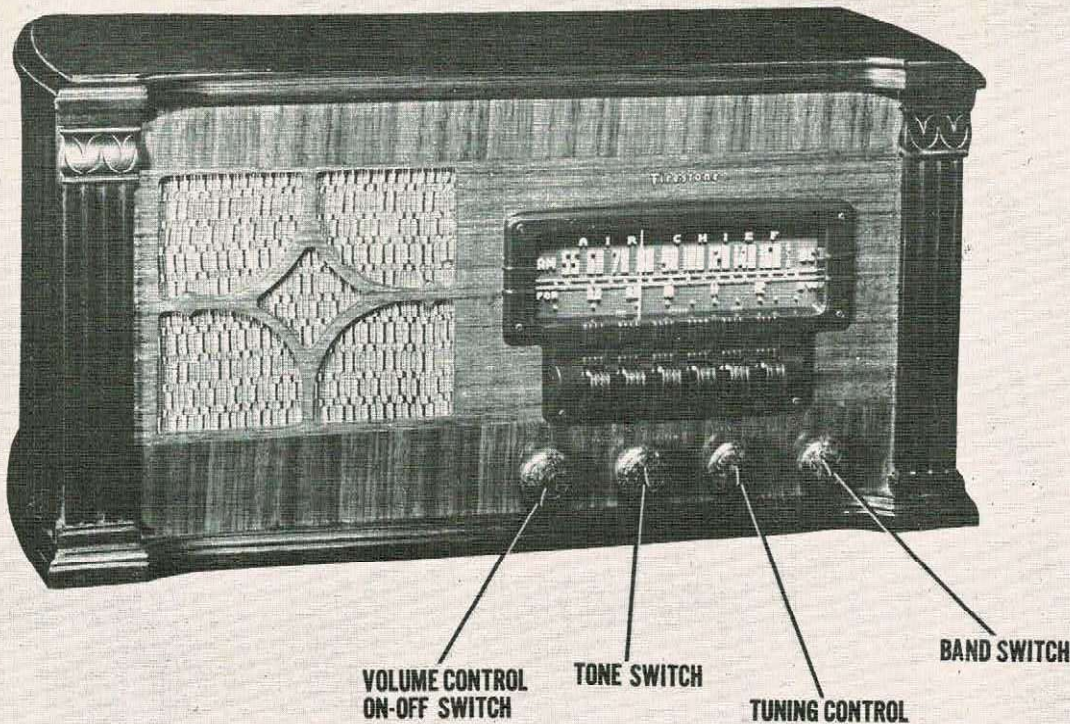


AIR CHIEF
MODELS 4-A-21, 4-A-22



AIR CHIEF MODEL 4-A-21

TRADE NAME	Air Chief, Models 4-A-21, (Code No. 5-5-9001A), 4-A-22 (Code No. 5-5-9001B).		
SUPPLIER	The Firestone Tire & Rubber Co., 1200 Firestone Parkway, Akron, Ohio		
TYPE SET	AC Operated 2 Band Superheterodyne Receiver - Self Contained Loop Antenna		
TUBES (SIX)	Types, 6SK7 RF Amp., 6SA7 1st Det.-Osc., 6SF7 IF-2nd Det.-AVC, 6SK7 1st AF, 6K6GT Power Output, 5Y3GT Rectifier		
POWER SUPPLY	117 Volts AC	RATING	.485 Amps. @ 117V AC
TUNING RANGE—BROADCAST	540-1780KC	SHORT WAVE	8.9 - 12.8MC

ALIGNMENT INSTRUCTIONS

To set pointer, turn variable fully closed and set pointer at the last reference mark at the left end of the dial. To insure proper tracking keep receiver and loop in the same relative position as they are when mounted in cabinet. Set volume control at maximum volume and keep output from signal generator no higher than is necessary to obtain output reading. Use insulated alignment screwdriver for adjusting.

DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
.1 MFD.	High side to stator of rear section of variable. Low side to chassis.	455KC	BC (Clock-wise)	Any point of non-interfering signal.	Across voice coil	A1,A2, A3,A4.	Adjust for maximum output
500 MMF.	Ext. Ant. Clip on loop.	1500KC	"	1500KC	"	A5	" " " "
500 MMF.	"	"	"	Tune for maximum output.	"	A6	" " " "
500 MMF.	"	"	"	"	"	A7	" " " "
500 MMF.	"	600KC	"	"	"	A8	Rock variable and adjust for maximum output. Repeat adjustments of A5, A6, and A7.
400Ω carbon resistor	"	12.0MC	SW (Counter-clock-wise)	12.0MC	"	A9	Adjust for maximum output. Check to see if proper peak was obtained by tuning in image at approx. 11.1 MC. If image does not appear, realign at 12.0MC by opening A9 to next peak. Recheck image.
"	"	"	"	Tune for maximum output.	"	A10	Rock variable and adjust for maximum output.

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AIR CHIEF
MODELS 4-A-21, 4-A-22

PARTS LIST AND DESCRIPTIONS

TUBES

ITEM No.	USE	REPLACEMENT DATA		RMA BASE TYPE	INSTALLATION NOTES
		AIR CHIEF PART No.	STANDARD REPLACEMENT		
1	RF Amp.	6SK7	6SK7	8N	
2	1st Det.-Osc.	6SA7	6SA7	8R	
3	IF-2nd Det.-AVC	6SF7	6SF7	7A2	
4	1st AF	6SK7	6SK7	8N	
5	Power Output	6K3GT	6K3GT	7S	
6	Rectifier	5Y3GT	5Y3GT	5T	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING	REPLACEMENT DATA					IDENTIFICATION CODES AND INSTALLATION NOTES
		AIR CHIEF PART No.	MALLORY PART No.	SOLAR PART No.	SPRAGUE PART No.	AEROVOX PART No.	
7A	20 CAP. 400	502207	F7339	DY-313	EL-312	4P-44J	UP6CJ13
7B	10 CAP. 400						
7C	25 CAP. 600						
8	.05 CAP. 600	502154	TP415	S-6-05	TC-15	PR25-25	DT6S5
9	.004 CAP. 300	502150	TP404	S-6-004	TC-24	694-004	DT6S4
10	.02 CAP. 400	502152	TP423	S-4-02	TC-12	494-02	DT4S2
11	.1 CAP. 400	502410	TP420	S-4-1	TC-1	494-1	DT4S1
12	.25 CAP. 400	502405	TP430	S-4-25	TC-2	494-.25	DT4S25
13	.004 CAP. 600	502150	TP404	S-6-004	TC-24	694-004	DT6S4
14	.05 CAP. 400	502157	TP423	S-4-05	TC-15	494-05	DT4S5
15	.01 CAP. 400	502151	TP421	S-4-01	TC-11	494-1	DT4S1
16	.1 CAP. 200	502155	TP424	S-4-1	TC-1	494-1	DT4S1
17	.05 CAP. 400	502157	TP423	S-4-05	TC-15	494-05	DT4S5
18	.05 CAP. 400	502157	TP423	S-4-05	TC-15	494-05	DT4S5
19	.05 CAP. 200	502160	TP423	S-4-05	TC-15	494-05	DT4S5
20	110 CAP. 500	502271	MC240	M0.8-31	1FM-31	1468-0001	SM5T1
21	250 CAP. 500	502201	MC240	M0.8-325	1FM-325	1468-00025	SM5T25
22	130 CAP. 500	502201	MC240	M0.8-325	1FM-325	1468-00025	SM5T25
23	39 CAP. 500	502132	MC225	M0.5-45	1FM-45	1468-00005	SM545
24	50 CAP. 500	502159	MC240	M0S.5-325	1FM-325	1469-00025	SR5T25
25	2 CAP. 500	502411	MC255	M0.3-21	1FM-21	1467-001	1W5U1
26	10 CAP. 500	502295	MC240	M0.5-325	1FM-325	1468-00005	SM545
27	270 CAP. 500	502161	MC240	M0.8-31	1FM-31	1468-0001	SM5T1
28	1000 CAP. 500	502165	MC240	M0.8-325	1FM-325	1468-00025	SM5T25
29	150 CAP. 500	502203	MC240	M0.8-325	1FM-325	1468-00025	SM5T25

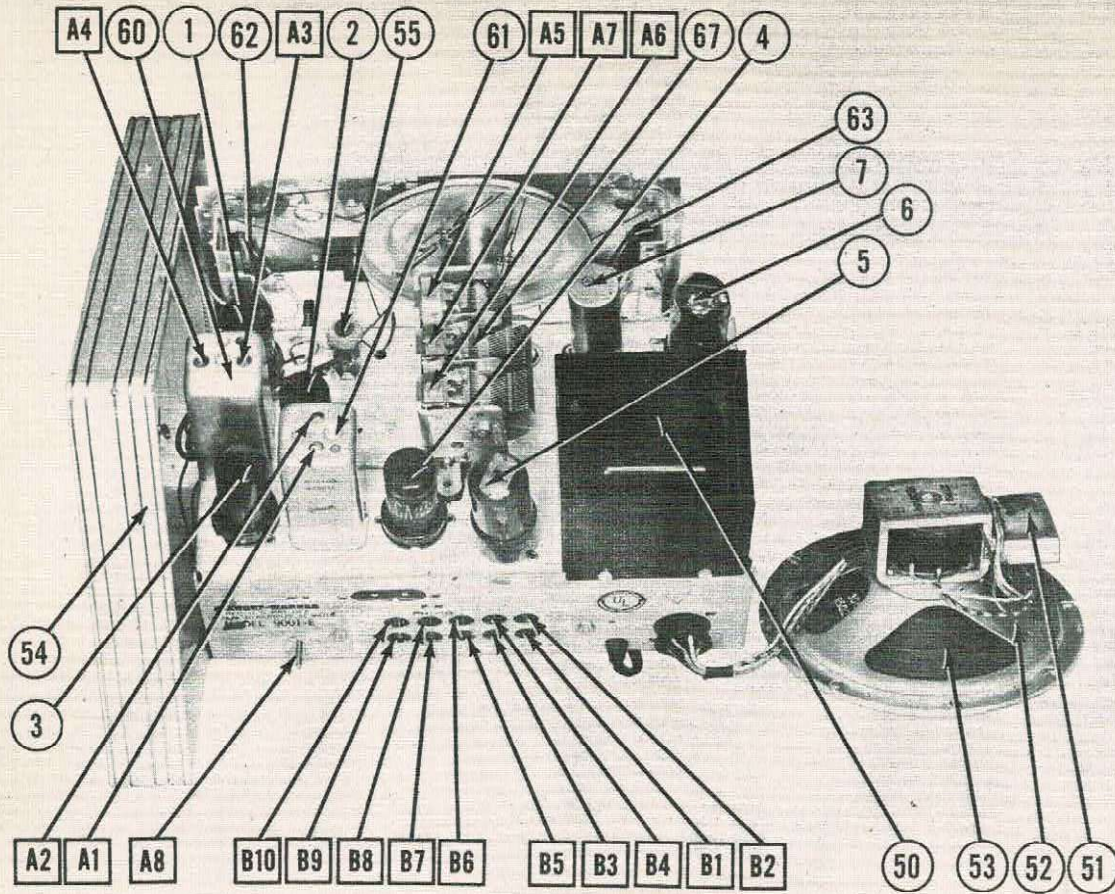
CONTROLS

ITEM No.	RATING	REPLACEMENT DATA					INSTALLATION NOTES
		AIR CHIEF PART No.	MALLORY PART No.	IRC PART No.	CLAROSTAT PART No.		
30A	500KΩ	502145	TK401	D13-133	AT-50-Z		Volume Control
30B	500KΩ	Not Req.	Not Req.	E	KSS-3		Attach to 30k per instructions
30C	Switch	Not Req.	Not Req.	41	SW-A		

RESISTORS

ITEM No.	RATING	REPLACEMENT DATA		IDENTIFICATION CODES
		AIR CHIEF PART No.	IRC PART No.	
31	4.7 Meg.	502468	BTS-4.7 Meg.	Y1-V1-Orn. RF Grid
32	220Ω	502127	BW-4-220	Red-Red-Br. RF Cathode
33	100KΩ	502132	BTS-100K	Br.-Blk.-Yl. RF Screen Dropping
34	470KΩ	502134	BTS-470K	Yl.-Vl.-Yl. AVC Network
35	22KΩ	502130	BTS-22K	Red-Red-Or. Osc. Grid

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

RESISTORS

ITEM No.	RATING		REPLACEMENT DATA		IDENTIFICATION CODES
	RESISTANCE	WATTS	AIR CHIEF PART No.	IRC PART No.	
35	550K	1	502306	BTA-53K	Or.-Or.-Or. Conv. Screen Dropping
37	2.2 Meg.	1	502135	BTS-2.2 Meg.	Red-Red-Grn. AVC Network
38	47K	1	502264	BW-2-47	Yl.-Vi.-Br. 1st IF Cathode
39	68K	1	502467	BTS-68K	Blue-Gray-Or. 1st IF Screen Dropping
40	47K	1	502131	BTS-47K	Yl.-Vi.-Or. 1st IF Filter
41	4.7 Meg.	1	502468	BTS-4.7 Meg.	Yl.-Vi.-Grn. 1st AF Grid
42	220K	1	502128	BTS-220K	Red-Red-Red 1st AF Cathode
43	220K	1	502133	BTS-220K	Red-Red-Yl. 1st AF Plate Load
44	100K	1	502132	BTS-100K	Br.-Blk.-Yl. 1st AF Plate Filter
45	2.2 Meg.	1	502135	BTS-2.2 Meg.	Red-Red-Grn. 1st AF Screen Dropping
46	47K	1	502134	BTS-47K	Yl.-Vi.-Yl. Output Grid
47	470K	1	502291	BTS-470K	Yl.-Vi.-Red Tone Compensation
48	56K	1	502127	BW-2-56K	Grn.-Blue-Dr. Tone Compensation
49	330K	2	502137	BW-2-330	Or.-Or.-Br. Output Bias

TRANSFORMER (POWER)

ITEM No.	RATING			REPLACEMENT DATA		INSTALLATION NOTES
	PRI.	SEC. 1	SEC. 2	AIR CHIEF PART No.	STANCOR PART No.	
50	117V. @ 500 CT 5V @ .485A	6.2V @ 2.02A	6.2V @ 2.02A	502174	P-6120*	*Drill new mounting holes.

TRANSFORMER (OUTPUT)

ITEM No.	RATING			REPLACEMENT DATA		INSTALLATION NOTES
	IMPEDANCE	DC RES.	SEC.	AIR CHIEF PART No.	THORDARN PART No.	
51A	757Ω	3.2Ω	6.5Ω	504122	T-225471	TSolder to bracket same as the original.
B				504081	A-38781	Used with speaker M-502168
C				502170		" " " " R-502168

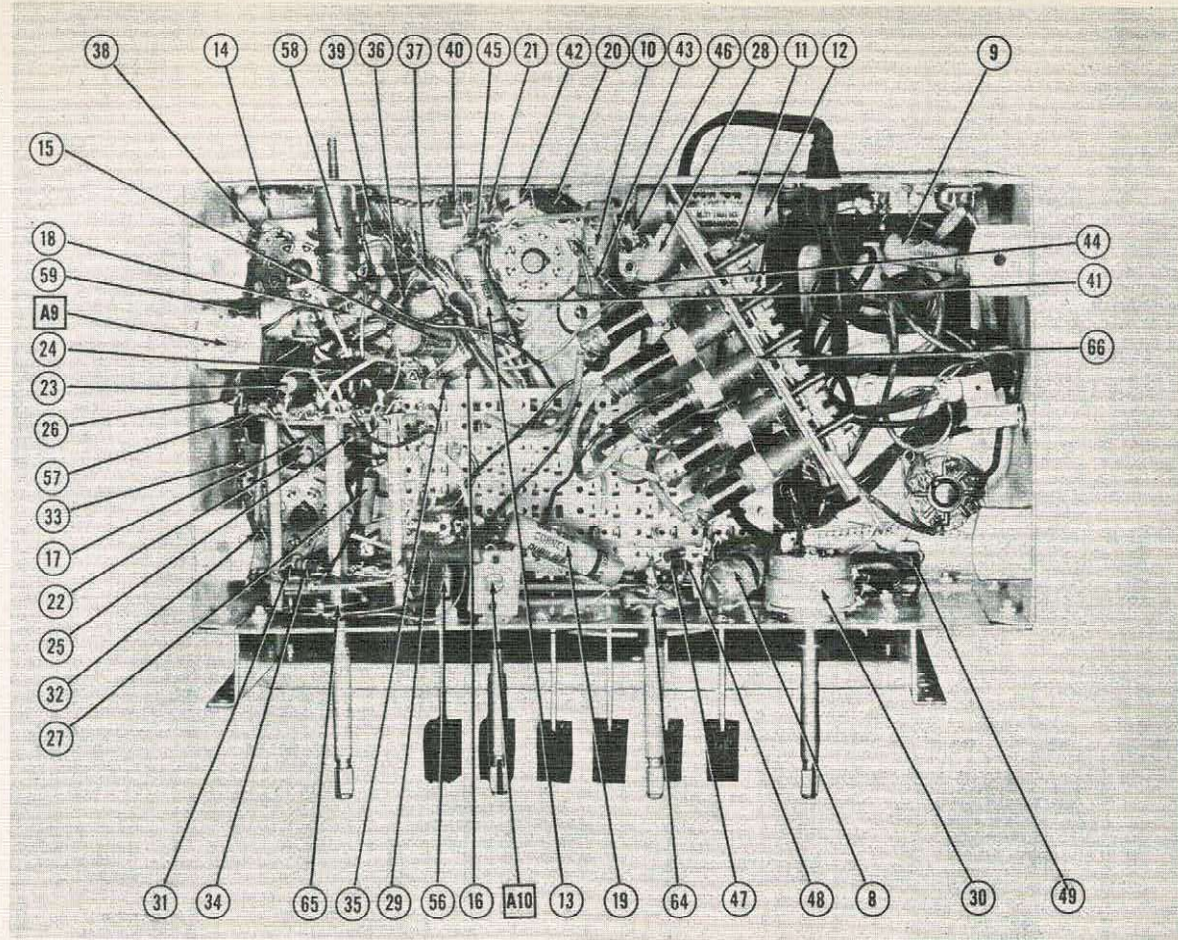
SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA		INSTALLATION NOTES
	FIELD	VC IMP.	AIR CHIEF PART No.	JENSEN PART No.	
52A	1000Ω	3.2Ω	D-502168	ST-431	Used with Output Transformer 504122
B	Speaker		M-502168	Mod. H-6S	" " " " 504081
C	Speaker		R-502168		" " " " 502170
52A	6-8/16"	VC DIA.	504123		Used with Speaker M-502168
B	Cone	1/2"	504082		" " " " R-502168
C	Cone		502159		

R F COILS

ITEM No.	USE	DC RES.		REPLACEMENT DATA		INSTALLATION NOTES
		PRI.	SEC.	AIR CHIEF PART No.	MEISSNER PART No.	
54	Loop	0Ω	0Ω	502247		
55	LC Ant. Coil	.5Ω	3Ω	502112		
56	SW Ant. Coil	.5Ω	3Ω	502110		
57	5C RF Coil	11Ω	0Ω	502113		
58	5C Osc. Coil	.2Ω	.2Ω	502114		
59	SW Osc. Coil	20Ω	20Ω	502111	16-6688	
60	Input IF	19Ω	18Ω	502102	16-6660	
61	Output IF			502103		

CHASSIS—BOTTOM VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

RESISTORS

ITEM No.	RATING		REPLACEMENT DATA		IDENTIFICATION CODES	
	RESISTANCE	WATTS	AIR CHIEF PART No.	IRC PART No.		
35	33K	1	502468	BTS-23K	Or.-Or.-Or. Conv. Screen Dropping	
37	2.2 Meg.	1	502135	BTS-2.2 Meg.	Red-Red-Grn. AVC Network	
39	47K	1	502284	BW-47	Yl.-Vi.-Br. 1st IF Cathode	
39	88K	1	502467	BTS-88K	Blue-Gray-Or. 1st IF Screen Dropping	
40	47K	1	502131	BTS-47K	Yl.-Vi.-Or. 1st IF Filter	
41	4.7 Meg.	1	502468	BTS-4.7 Meg.	Yl.-Vi.-Grn. 1st AF Grid	
42	220K	1	502128	BTS-220K	Red-Red-Red 1st AF Cathode	
43	220K	1	502133	BTS-220K	Red-Red-Yl. 1st AF Plate Load	
44	100K	1	502132	BTS-100K	Br.-Blk.-Yl. 1st AF Plate Filter	
45	2.2 Meg.	1	502135	BTS-2.2 Meg.	Red-Red-Grn. 1st AF Screen Dropping	
46	47K	1	502134	BTS-47K	Yl.-Vi.-Il. Output Grid	
47	470K	1	502291	BW-470K	Grn.-Blue-Br. Tone Compensation	
48	53K	1	502127	BW-53K	Or.-Or.-Br. Output Bias	
49	53K	2	502137	BW-53K		

TRANSFORMER (POWER)

ITEM No.	RATING			REPLACEMENT DATA			INSTALLATION NOTES
	PRI.	SEC. 1	SEC. 2	AIR CHIEF PART No.	STANCOR PART No.	THORADON PART No.	
50	117V. @ 60W. CT 5V @ 1.435A @	5.2V @ 2.02A		502174	P-5120*	T-13520*	*Drill new mounting holes.

TRANSFORMER (OUTPUT)

ITEM No.	RATING			REPLACEMENT DATA			INSTALLATION NOTES
	IMPEDANCE	DC RES.		AIR CHIEF PART No.	STANCOR PART No.	THORADON PART No.	
51A	757Ω	3.2Ω	630Ω	504122	A-53761	T-225471	Solder to bracket same as the original.
B				504061			Used with speaker M-502168
C				502170			" " " " R-502168

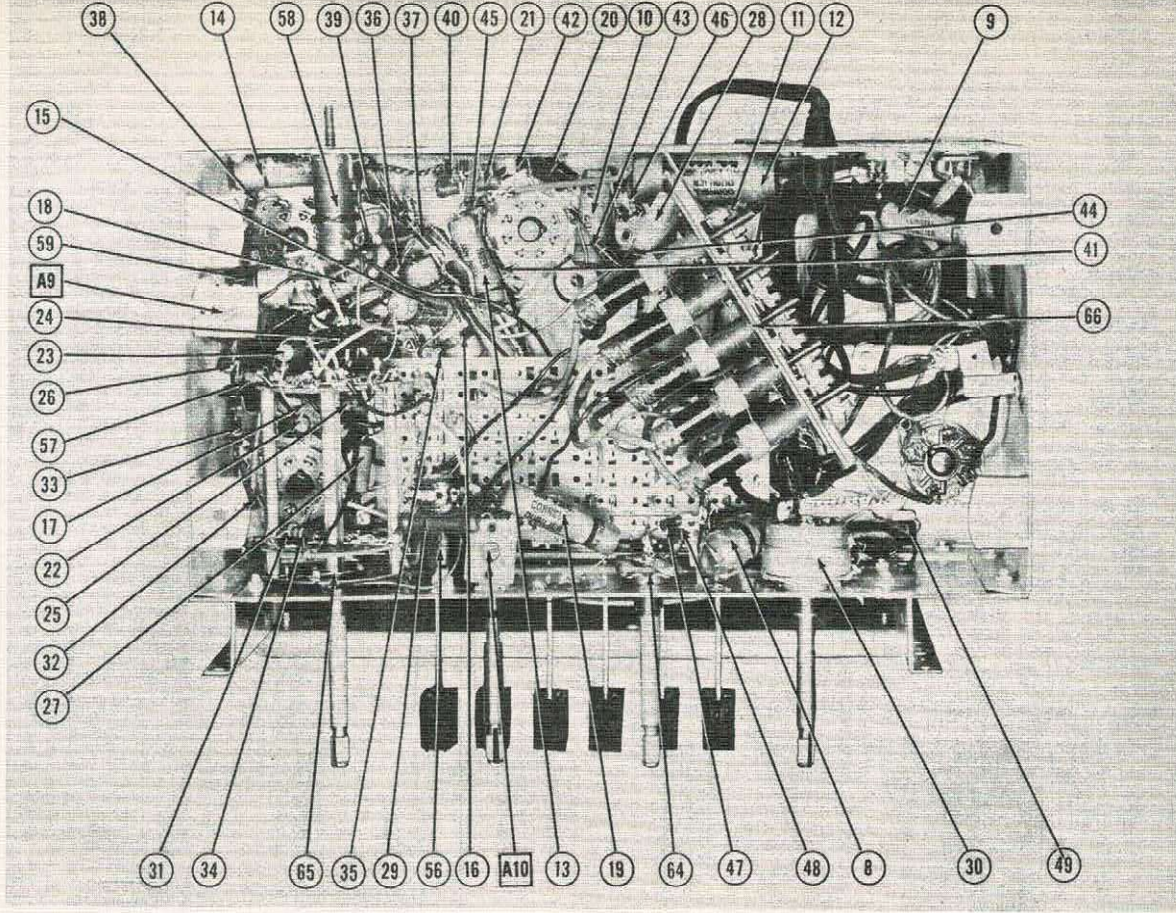
SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA		INSTALLATION NOTES
	FIELD	VC IMP.	AIR CHIEF PART No.	JENSEN PART No.	
52A	1000Ω	3.2Ω	D-502168	ST-421	Used with Output Transformer 504122
B	Speaker		M-502168	Mod. H-6S	" " " " 504061
C	Speaker		R-502168		" " " " 502170
53A	6-3/16"	1/2"	504123		Used with Speaker M-502168
B	Cone		504062		" " " " R-502168
C	Cone		502169		" " " " R-502168

R F COILS

ITEM No.	USE	DC RES.		REPLACEMENT DATA		INSTALLATION NOTES
		PRI.	SEC.	AIR CHIEF PART No.	MEISSNER PART No.	
54	Loop	0Ω	0Ω	502247		
55	LC Ant. Coil	.5Ω	3Ω	502112		
56	SW Ant. Coil	.5Ω	0Ω	502110		
57	2C RF Coil	110Ω	0Ω	502113		
58	BC Osc. Coil	5Ω	5Ω	502114		
59	SW Osc. Coil	.2Ω	2Ω	502111		
60	Input IF	20Ω	2Ω	502122	16-6858	
61	Output IF	19Ω	19Ω	502123	16-6860	

CHASSIS—BOTTOM VIEW



VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	6SK7	OV.	6.2VAC	OV.	OV.	14VDC	56VDC	OV.	236VDC
2	6SA7	OV.	6.2VAC	238VDC	70VDC	-3VDC	OV.	OV.	-2VDC
3	6SF7	OV.	-2VDC	5VDC	72VDC	OV.	238VDC	OV.	6.2VDC
4	6SK7	OV.	6.2VDC	OV.	OV.	1.35VDC	20VDC	OV.	83VDC
5	6K6GT	OV.	6.2VDC	223VDC	238VDC	-2.1VDC	-19VDC	OV.	OV.
6	5Y3GT	OV.	305VDC	OV.	310VAC	OV.	30VAC	OV.	305MDC

NOTE: VOLTAGE AND RESISTANCE READINGS TAKEN IN "STANDARD BROADCAST POSITION."

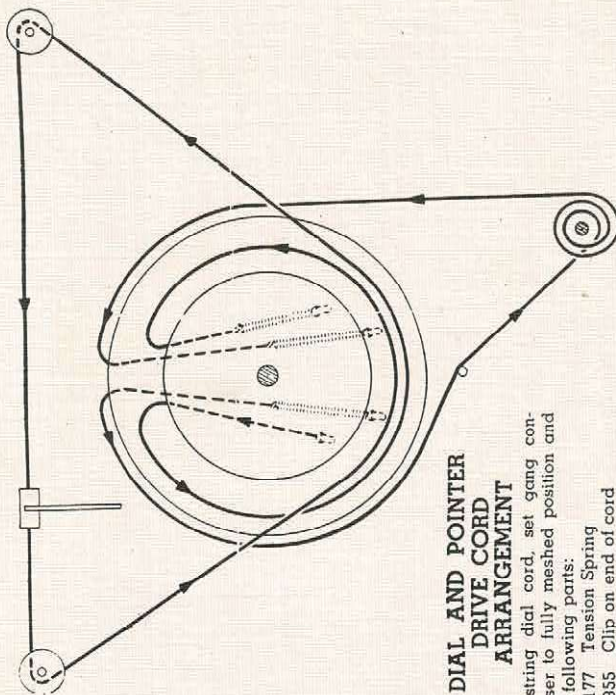
RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	6SK7	OV.	OV.	OV.	1.9MEG.	185Ω	295KΩ	OV.	195KΩ
2	6SA7	OV.	OV.	195KΩ	228KΩ	18KΩ	5Ω	OV.	1.8MEG.
3	6SF7	OV.	1.8MEG.	44Ω	260KΩ	360KΩ	195KΩ	OV.	1Ω
4	6SK7	OV.	OV.	OV.	4MEG.	2.2KΩ	2.4MEG.	OV.	515KΩ
5	6K6GT	INF.	INF.	195KΩ	195KΩ	480KΩ	300Ω	OV.	OV.
6	5Y3GT	INF.	195KΩ	INF.	450Ω	INF.	460Ω	INF.	195KΩ

RESISTANCE READINGS IN THE B+ CIRCUITS MAY VARY WIDELY
ACCORDING TO THE CONDITION OF THE FILTER CAPACITORS

- DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1000 ohms per volt.
- Socket connection are shown as bottom view.
- Measured values are from socket pin to common negative.

- Line voltage maintained at 117 volts for voltage measure.
- Nominal tolerance on component values makes possible a variation of $\pm 10\%$ in voltage and resistance readings.
- Volume control at maximum, no signal applied for voltage measurements.

DIAL AND POINTER
DRIVE CORD
ARRANGEMENT

To string dial cord, set gang condenser to fully meshed position and use following parts:

- 113177 Tension Spring
- 114955 Clip on end of cord
- 119087 Ring
- 117057 Cord (61 inches)
- 34 inches for pointer drive
- 27 inches for tuning drive

DIAL LIGHT

ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA		INSTALLATION NOTES
					AIR CHIEF PART No.		
62	Bayonet	6-8	0.25	Blue	110529		Type 44
63	Bayonet	6-8	0.25	Blue	110529		Type 44

MISCELLANEOUS

ITEM No.	PART NAME	AIR CHIEF PART No.	NOTES
64	Tone Switch	502146	
65	Band Switch	502147	
66	PR Assembly	502025	Complete Coil & Trimmer Assy. for Automatic Tuning.
67	Tuning Cap. PR Switch	502122	3 Gang Variable Cap.
68	"	502177	
69	"	502171	SW Osc. Adj. 5-25 MHz.
70	"	502172	SW Ant. Adj. 25-100 MHz.
71	"	502907	PR Tuning (540-100KC)
72	"	502908	" (950-130KC)
73	"	502909	" (975-160KC)

PUSH BUTTON ADJUSTMENTS

The five push buttons from left to right (facing front of receiver) cover the following frequencies in order:

540 to 1000KC, 950 to 1300KC, 650 to 1300KC, 975 to 1600KC, 975 to 1600KC.

To set the individual push buttons on the desired stations proceed as follows:

1. Select a station within the frequency range of B1 and B2 (540 to 1000KC) and tune in the station using manual tuning.
2. Press in push button corresponding to B1 and B2 which is the one on the left (facing front of receiver).
3. Adjust B1 to tune in the desired station, turning the adjustment counter-clockwise increases the frequency.
4. Adjust B2 for maximum volume of the selected station.
5. Proceed in the same order in setting the remaining push buttons. Always select a station within the frequency range of the corresponding push button adjustments. B3, B5, B7 and B9 are adjusted to tune in station. B4, B6, B8 and B10 are adjusted for maximum volume of selected station.

DISASSEMBLY INSTRUCTIONS

1. Remove the four push-on type control knobs and felt washers.
2. Remove eight Phillips head screws from cabinet back cover. Remove cover.
3. Disconnect blue and green leads from loop antenna.
4. Remove Phillips head screw holding brown antenna lead to loop antenna. Remove lead.
5. Remove push-on type brown lead clip from loop antenna.
6. Remove three Phillips head wood screws holding loop antenna to cabinet. Remove loop ant.
7. Remove four hex nuts and washers holding speaker to cabinet.
8. Disconnect speaker plug from chassis by removing set screw.
9. Remove speaker from cabinet.
10. Remove four hex head machine screws and washers holding chassis to cabinet. Remove chassis.